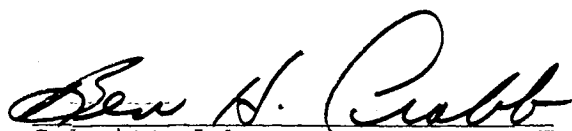


1978

PERSONNEL

ROBERT G. PERSONIUS	Refuge Manager	GS-13	PFT
BEN H. CRABB	Ass't. Refuge Manager	GS-12	PFT
DIANA A. OLSEN	Administrative Officer	GS-07	PFT
VERONICA RAY	Clerk-typist (EOD 12/02/78)	GS-04	CS
MICHAEL S. BITSKO	Outdoor Recreation Planner	GS-11	PFT
EVELYN G. GRODY	Outdoor Recreation Planner (resigned 11/04/78)	GS-09	PFT
JANE G. GULL	Wildlife Biologist	GS-09	PFT
JOSEPH CAMPISI	Police Officer	GS-05	PFT

  
Submitted by \_\_\_\_\_ Date \_\_\_\_\_

Area Office \_\_\_\_\_ Date \_\_\_\_\_

San Francisco Bay National  
Wildlife Refuge

Regional Office \_\_\_\_\_ Date \_\_\_\_\_

Fremont, California  
Complex Office

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## I. GENERAL

### A. Introduction

In the 1960's, local citizens began to recognize the need to preserve the valuable wildlife and habitat of the south Bay. Many citizens have sought the visual relief of nature amid the increasing jungle of concrete. The 23,000-acre San Francisco Bay National Wildlife Refuge was created in 1972 as a result of their efforts.

Only small portions of the Refuge are now open to the public. Eventually, the Refuge will contain many hiking and bicycling trails, fishing piers and other facilities.

### B. Climatic and Habitat Conditions

The area within the Refuge boundary is typical of south San Francisco Bay. Topography is flat and few locations are much above high tide. Five general habitat types are included in the Refuge: salt ponds, salt marshes, upland, tidal mudflats and open water.

The Bay Area has a modified Mediterranean climate, with warm to hot, dry summers and moist, mild winters. The varied topography of the area permits wide variation of local climate in terms of temperature, rains, wind, and fog. Average annual rainfall in the south Bay is 16 inches, and it occurs primarily between November and April. The prevailing wind direction is from the northwest with maximum speeds of 16 miles per hour generally occurring by late afternoon.

During the night and early morning, the light winds reverse to the southeast. Cooling sea breezes and high fog in the summer affect coastal and Bay Area cities so that they seldom experience temperature extremes.

The cooling sea breezes also create frequent inversions, with the warm air forced upwards trapping the pollutants and producing smog.

### C. Land Acquisition

#### 1. Fee Title

Offers have been sent to almost all the owners of private lots in the New Chicago Marsh subdivision adjacent to the site of the Environmental Education Center and Station Island (Drawbridge). The Justice Department has not allowed purchase of these properties as the titles are clouded by the State's Tideland Trust concept.

Title to 1.85 acres at the central Alviso site was conveyed to the Federal Government in February.

Civil Case No. 0-77-1412 RHS (N.D. Cal), was filed on June 30, 1977. This case, U.S. versus 15,347 acres, more or less, situated in the Counties of Alameda, Santa Clara and San Mateo, State of California, Leslie Salt Company, et al., was filed with a Declaration of Taking. In August the Federal Government requested a hearing on possession since negotiations on a suitable "use agreement" was still far from agreement. On September 26, the District Court awarded possession and posting began immediately.

## 2. Easements

Work has continued in acquiring rights-of-way for the Refuge. Considerable work remains however.

## 3. Other

Staff appraisals and negotiations continued on six tracts adjacent to the Leslie Salt Company property.

# D. System Status

## 1. Objectives

For the purposes of Refuge program scheduling, tentative output figures have been projected for the Refuge's planned public use activities. A vast disparity presently exists between the "current year" outputs and the "maximum level" outputs due in part to the Refuge's present no-land status; the currently claimed outputs basically represent written and oral off-site services rendered to the public versus the on-site activities which shall be claimed subsequent to land acquisition and development.

## 2. Funding

Operating cost budgets for the Refuge's funded four years are as follows:

Activity No.	Subactivity	FY 1976	FY 1977	FY 1978	FY 1979
11210	O&M	119,700	96,600	109,100	216,500
1220	MB		16,500	15,500	22,000
1240	I&R			84,200	142,700
1400	SE	14,000	26,700	30,500	31,000
1500	I&R	28,300	39,000		
1110			3,000		2,000
TOTAL		162,000	181,800	239,300	414,200

## II. CONSTRUCTION AND MAINTENANCE

### A. Construction

On November 11, 1977, S. J. Amorosa Construction Company Incorporated was awarded the contract for construction of the Headquarters-Interpretive Center and North Coyote Hills Visitor Contact Point. This project was about 85% completed by the end of December 1978.

A second contract was awarded the same day to R. V. Frazier Construction Company for construction of the Environmental Education Center. This project was about 80% completed by the end of December 1978.

Utility contracts for both sites were delayed until October because of funding problems with the above buildings. However, on December 15, 1978, Manual C. Jardim, Incorporated was issued contract FWS 9-7811, in the amount of \$376,197.60 for the construction of utilities at the Headquarters-Interpretive Center. On the same date, D. W. Young Construction Company was awarded contract FWS 9-7810, in the amount of \$235,095.00 for the construction of utilities at the Environmental Education Center at Alviso.

### B. Maintenance

Nothing to report.

### C. Wildfire

Not applicable.

## III. HABITAT MANAGEMENT

### A. Croplands

Not applicable.

### B. Grasslands

Not applicable.

### C. Wetlands

Nothing to report.

### D. Forestlands

Not applicable.

E. Other Habitat

Nothing to report.

F. Wilderness and Special Areas

Nothing to report.

G. Easements for Waterfowl Management

The year-to-year cooperative agreement was renewed between the Service and Mobil Oil Estates Limited to provide Refuge status to a sensitive bird nesting area on Bair Island prior to its acquisition. The leased 125-acre plot includes the only wading bird rookery in south San Francisco Bay.

IV. WILDLIFE

A. Endangered Species

The Refuge is the sometime home to four birds and one rodent protected under the Endangered Species Act. One by one, here is how they fared on the Refuge in 1978.

Brown Pelican - Brown pelicans could again be found roosting on the dikes between salt ponds 9 and 10 in the Alviso Unit along with their cousins, the white pelican. Regular censuses were not made though numbers from July through November seemed to approximate those in former years (maximum numbers; 100-200 brown and 400-500 white). A good vantage point to observe brown pelicans fishing was the Dumbarton Bridge, particularly during September.

American Peregrine Falcon - Two sightings were made; one of a falcon pursuing a cock pheasant across the entrance road to the Environmental Education Center site on November 17; the second sighting was made during an aerial waterbird census. This individual was seen flying along the Alameda Flood Control Channel north of the Coyote Hills. Falcons have been known to overwinter in the latter of those two sites, though undoubtedly there are other traditional areas of use.

Least Tern - The California Department of Fish and Game, with some monetary assistance from the U.S. Fish and Wildlife Service conducted a two-part study on the least terns of California. The first part was to gather information about nest site characteristics. The second element was to locate foraging areas.

Dick Erickson, a student at Cal State, Hayward, did the portion of the study in the San Francisco Bay area, though little work was actually done on the Refuge. He is presently working with Paul Kelly of the Long Beach office of California Department of Fish and Game to summarize the data.

It is not believed that least terns nested on Bair Island this year. Visits to Bair Island on June 9 and 23 failed to show signs of nesting.

During a survey for snowy plovers on the Refuge, two least terns were located north of the Refuge on dikes in the Baumberg Tract of salt ponds.

Least terns foraged in areas closed to the Refuge. Up to 80 birds, of which several were immatures, were seen in early August feeding at Ravenswood Triangle west of the Dumbarton Bridge (The Kite Call, September 1978) and 18 birds were seen around Charleston Slough, south of the Palo Alto Baylands in mid-August (The Avocet, October 1978).

California Clapper Rail - True to form, our Refuge clapper rails lived up to their "Groucho-like" reputations, i.e., they proved comical not only in their gaited chicken-like walk, but also in where they were likely to turn up. One clapper rail, perhaps more catholic in food and habitat preferences than most, decided to explore the environs of a Sherman live trap, baited with bird seed and walnuts and meant to capture unsuspecting salt marsh harvest mice. Unharmred, it was released to the stupid again another day.

A second rail, obviously trained and tame, appeared on signal from the Biologist, who was giving a tour of the salt marshes to the Army Corps of Engineers. In the midst of a discussion of important habitat for the clapper rail, and the Refuge's concern for any loss of wetland areas, who should appear for a leisurely stroll beside Alviso Slough? You guessed it--"Groucho," again.

On the science side of things, serious rail censuses were also attempted. One to two rails were called from the big bend in Newark Slough near the southern overlook on Headquarters hill. Naturally, this was noted in our Section 7 Consultation for Sacramento's Endangered Species people. We hope to build boardwalks and bridges in this marsh, the Army Corps of Engineers, Coast Guard, rails and mice, and archaeologists willing.

A second try with taped called in Ideal Cement Marsh during the December high tides failed to excite much action. However 28 rails were counted here the very next month (to be continued in the 1979 narrative--hang in there).

Perhaps (but then again) the most important rail event was the study begun by Tom Harvey for California Department of Fish and Game of rail distribution. Concentraing on San Francisco Bay, Elkhorn Slough, and Suisun Marsh, this should be a valuable addition to the knowledge provided by Bob Gill's work for the State in 1971. Results will be available in 1979 or 1980.

Salt Marsh Harvest Mouse - Four trapping studies were conducted on the Refuge this year. Two new areas were trapped: Newark Slough and Audubon Marsh along the Southern Pacific Railroad tracks. Newark Slough was trapped to satisfy data requirements of a Section 7 Internal Consultation for the area. The Refuge would like to build a network of boardwalks and bridges in this marsh. Nine different individuals were trapped in a nine-night effort in June and August. Extrapolating, an estimate of 70 mice may inhabit the marsh immediately below Headquarters hill, east of the slough. A "may impact" Section 7 was filed with Sacramento, Region and later Washington office, both gave the green light to our construction plans provided cautionary measures are taken. These include hand-driving the piles, leaving plenty of clearance between the marsh and boardwalks, and the ability to restrict people access if necessary.

The second area that was trapped for the first time was Audubon Marsh along the Southern Pacific Railroad tracks. Pacific Gas and Electric's consulting biologists conducted a four-night trapping study in November. A total of 13 different individuals were trapped, a good count considering the lateness of the year for good trap success. Pacific Gas and Electric's study concerns the potential effects of a transmission line right-of-way across the Refuge.

New Chicago Marsh was trapped by the Refuge in late August. A three-night effort failed to produce any individuals though this area is known to be marginal for the species (Zetterquist, 1976). This effort was also done as an in-house Section 7 Consultation. A boardwalk system has also been proposed for this "dry" marsh, if and when it is ever restored. Again, our "will affect" Section 7 received approval from Area, Region and Washington offices with the understanding that some of New Chicago Marsh be restored to salt water conditions inhabitable by the mouse.

Dr. Howard Shellhammer of San Jose State University began his eleventh year of trapping at Triangle Marsh. He obtained 11 new individuals and no recaptures from the previous year. Dr. Shellhammer is very concerned about the genetic isolation of populations in small patches of marsh and urges the Refuge to connect marshes wherever possible as well as restoring and creating new marsh areas. He also pleads to avoid destruction of the dike vegetation, particularly *Atriplex semiina* and nest sites. Dr. Shellhammer's report with his recommendations are in the Refuge files.

Of final note is the discovery of a family of salt marsh harvest mice in a woodpile in the town of Drawbridge in mid-November. This is an unusually late occurrence of breeding for the species. By December 10, the count (3) had apparently been weaned or whatever and were gone.



Elsewhere in the field of endangered species - On behalf of both the mouse and the tern, "no effect" Section 7 in-house Consultations were filed for the Central and North Coyote Hills visitor contact points. There is no habitat for the mouse to occur at either site. Nesting by the least tern, should it occur on the dikes open to people by this trail system, should not be affected as the trails will be closed from April through July..

## B. Migratory Birds

### 1. Waterfowl

Because of inclement weather on the day chosen for the winter waterfowl survey (Jan. 27) the south Bay was not censused.

Two aerial waterbird censuses were conducted later in the year. On October 30 and December 8 the following numbers of shorebirds and waterfowl were recorded by Refuge staff and Bruce Elliott of California Department of Fish and Game (see table on next page).

Land transects were begun in the Coyote Hills system of salt ponds and around the Pacific Gas and Electric substation in December and continued through 1979. The four censuses conducted in 1978 revealed that the highest numbers of birds were shovelers (average 5,500 at Coyote Hills; 1,100 at PG&E substation), ruddy ducks, Bonaparte's gulls, sandpipers, willets, and black-necked stilts.

Regular waterbird censuses were also begun in November in the Alviso Unit of salt ponds between Alviso and Artesian Sloughs by the South Bay Institute of Avian Studies, directed by Michael Rigney. Four censuses are conducted per month. It is hoped that by the end of one year this study will have determined some of the parameters affecting usage of the various salt ponds by the species.

Botulism was not a major problem this summer and fall, though it did cause its share of havoc to the Refuge. During the first three weeks of July, 135 dead and 13 sick birds (mostly pintail and mallards) were retrieved. The mid-August to end of September clean-up efforts brought the totals to 417 dead and 79 sick. Sick birds were brought to the Peninsula Humane Society in San Mateo for rehabilitation. Botulism reconnaissance was terminated on or about September 16 when the airboat flipped and sunk causing the loss of much valuable gear, 50 duck carcasses, and the last remnants of confidence the biologist had in this monstrous machine.

Results of the botulism study conducted in the south Bay last year by the San Francisco Regional Water Quality Control Board were made available to the Refuge this year (see Jam's, F. 1978. "Study of botulism in south San Francisco Bay during August-October 1977." San Francisco Regional Water Quality Control Board).

The study was conducted in the Alviso Unit, including the salt ponds, Artesian, Alviso, and Guadalupe Sloughs. There was very little evidence of bird mortality because of botulism in 1977 (25 dead, 35 sick ducks). The "outbreak" in Guadalupe Slough was possibly related to a die-off of amphipods at the mouth of the slough in September, though the amphipods tested negatively for botulism toxin. There was no die-off of invertebrates preceding the occurrence of botulism in birds of Artesian Slough.

The problem of avian botulism outbreaks in the south Bay remains unresolved. A variety of factors seem involved, including anoxic slough waters due to sewage discharges, higher water temperatures in the south Bay, little flushing or water movements in the part of the Bay, invertebrate die-offs, carcass putrefaction, among others.

## 2. Marsh and Waterbirds

Michael Rigney and Keppler Stone continued their studies of the heron and egret colony on Bair Island. They report increase breeding success in great blue herons and snowy egrets, possibly related to the end of the 2-year drought. Decreased reproductive success by the black-crowned night heron was thought to be related to eggs rolling out of the flat nests of this normally ground-nesting species.

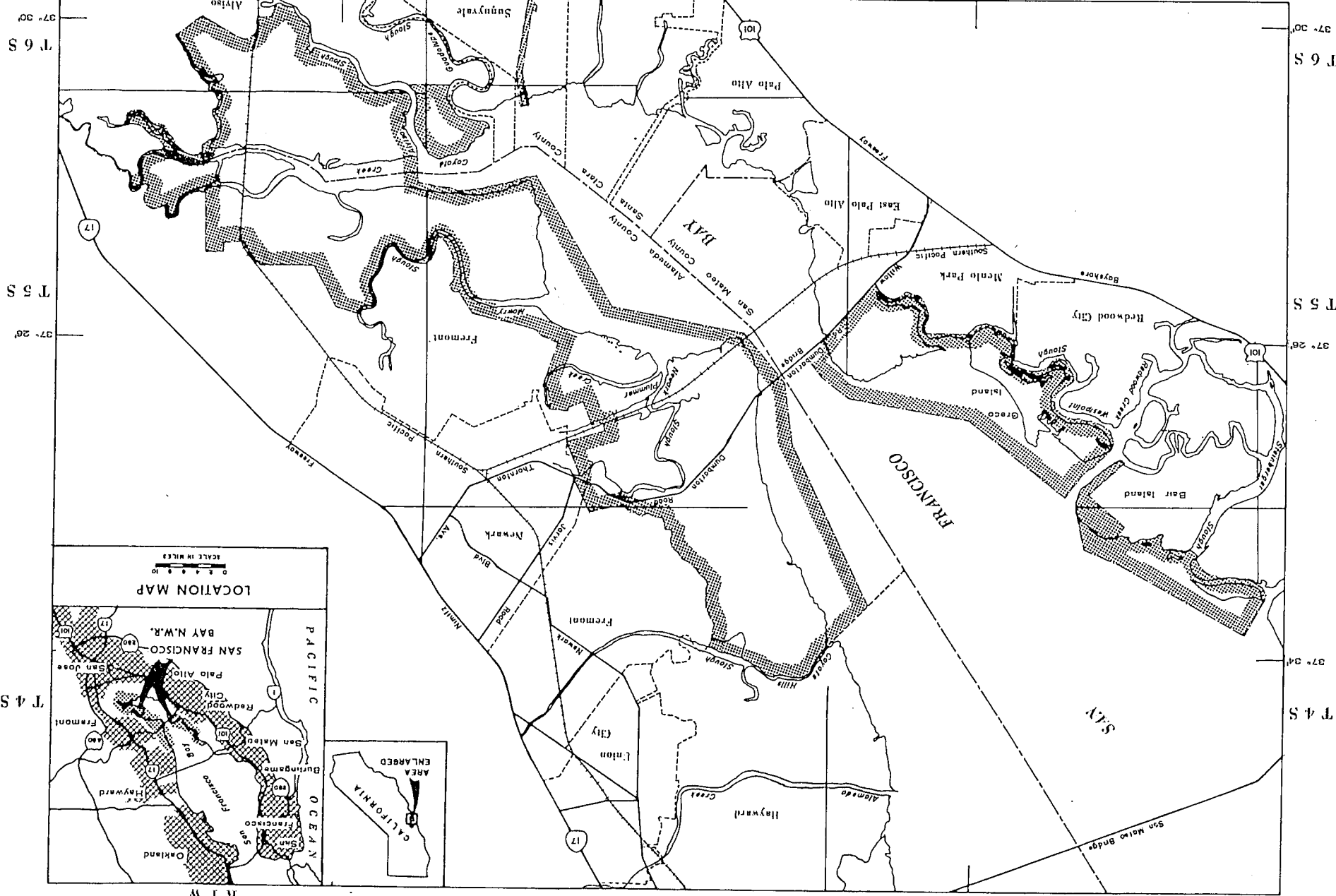
The coyote bushes which support one, two and even three tiers of nests, continue to show signs of old age. They now believe this is due to physical factors other than the impact of the birds.

No recruitment of coyote bushes is evident in the colony. Someday it would be worthwhile to build some artificial nesting platforms in the colony to test their receptivity by the birds.

As a result of their continuing banding efforts, a flier was distributed asking for sightings of marked birds. A table of reproductive statistics and a copy of the flier follow.

SAN FRANCISCO BAY FLIGHT  
WATER BIRD CENSUS

Species	Oct. 30	Dec. 8
Small Grebe	51	2,615
Western Grebe	4	468
White Pelican	133	370
Brown Pelican	0	5
Cormorant	475	500
Blue Heron	9	16
Common Egret	39	23
Snowy Egret	41	10
Night Heron	5	102
<u>TOTAL EGRETS, ETC.</u>	<u>637</u>	<u>4,109</u>
Mallard	0	0
Gadwall	1,000	111
Pintail	11,497	8,945
Teal	20	40
Widgeon	2,550	3,935
Shoveler	250	21,515
Canvasback	65	2,495
Scaup	230	16,519
Goldeneye	0	3
Bufflehead	0	522
Surf Scoter	468	3,858
Ruddy	0	5,713
Unidentified duck	80	
<u>TOTAL WATERFOWL</u>	<u>16,160</u>	<u>63,656</u>
Marsh Hawk	3	5
White-tailed Kite		1
Peregrine Falcon		1
Coot	85	2,071
Whistling Swan		6
Turkey Vulture	2	
Black-bel. Plover	4	40
Sandpiper	6,249	43,360
Willet	1,455	2,345
Dowitcher	1,375	10
Godwit	1,060	680
Avocet	1,478	5,065
Stilt	850	1,736
<u>TOTAL SHOREBIRDS</u>	<u>12,561</u>	<u>53,320</u>
Bonaparte's Gull	10	600
Forster's Tern	35	
Caspian Tern		
<u>TOTAL GULLS</u>	<u>45</u>	<u>600</u>
<u>TOTAL ALL BIRDS</u>	<u>29,309</u>	<u>121,085</u>



# WANTED

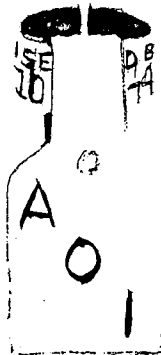
## SIGHTINGS OF COLOR-BANDED HERONS AND EGRETS

Approximately 300 Black-crowned Night Herons and Snowy Egrets and 50 Great Blue Herons have been color-banded in an effort to insure their survival in the south San Francisco Bay. Your help is urgently needed. If you see any of these birds would you write on a postcard —

1. Species seen, and location.
2. Number of tag (if visible), and color.
3. Date and time of observation.
4. Behavior of bird (feeding, roosting, flying).

Please send observations to:

Michael Rigney  
Avian Biology Laboratory  
San Jose State University  
San Jose, CA 95192  
U.S. Bird Banding Laboratory  
Laurel, MD 20810

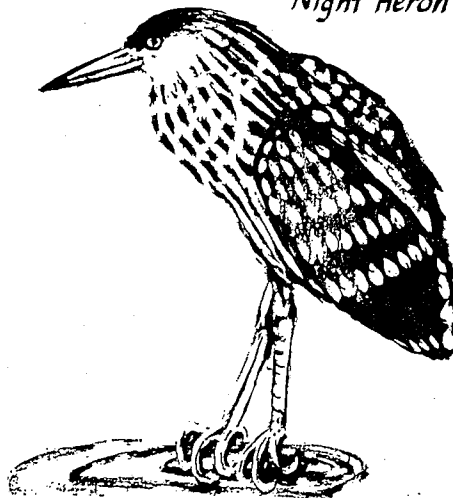


OR

*Snowy Egret*

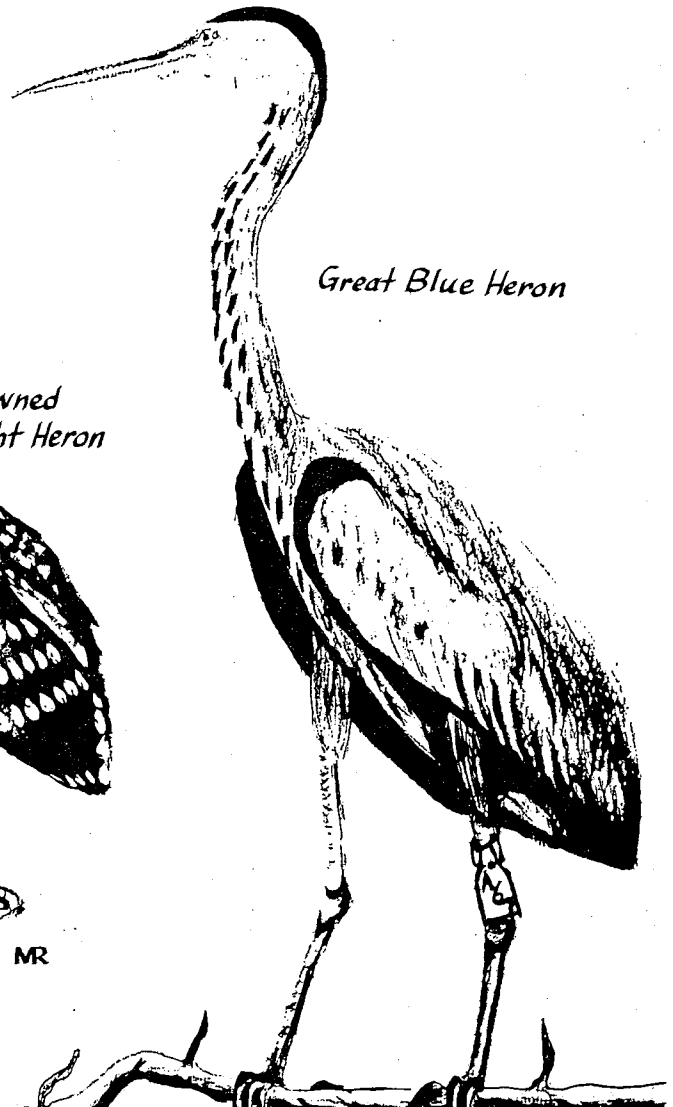


*Black-crowned  
Night Heron*



MR

*Great Blue Heron*



SPECIES	NO. PAIR		FLEDGED/PAIR	
	1977	1978	1977	1978
Great Blue Heron	28	25	1.6	2.0
Snowy Egret	230-280	275	1.6	2.4
Black-crowned Night Heron	500	380	1.6	1.7

The heron/egret colony at Alviso again had about 500 pair (approximately equally divided) of snowy egrets and black-crowned night herons. In addition it was thought that a few (3 pair?) great egrets nested there. There has been no report of their nesting in the south Bay since 1927. Calvin Hom of San Jose State attempted to locate nests and regurgitated pellets in August but was unsuccessful because of uncooperation of the tides and soft mud.

The snowy plover received a large amount of attention on the Refuge this summer. Part of the 2-year study (funded by California Department of Fish and Game and contracted to the Point Reyes Bird Observatory) was to determine the number of breeding snowy plovers in the whole State of California. In June the entire Refuge was surveyed for their presence by Gary Page and Phil Henderson. They collected the following information:

Adult males	101	Juveniles	8
Adult females	89	Broods	54
Adult (unknown sex)	162	Chicks	112
TOTAL	352	Nests	36

Snowy plover "hot spots" are found in the Coyote Hills and Fremont Units of salt ponds as well as within Leslie's central plant site. Twenty nests were found on levees and 16 on salt ponds. A detailed map of nest, brood and adult locations was prepared for the Refuge by Page and Henderson.

### 33. Shorebirds, Gulls, Terns and Allied Species

Nothing to report.

### 4. Raptors

Nothing to report.

5. Other Migratory Birds

Nothing to report.

C. Mammals and Non-Migratory Birds and Others

1. Game Mammals

Nothing to report.

2. Other Mammals

The main news about mammals on the Refuge concerns harbor seals. Of most importance was the award of a one year, \$4,700 contract to Doris Alcorn and Lyman Fancher to study the population dynamics and behavior of the Mowry Slough harbor seal population. Included will be the determination of numbers (ground and aerial), study of movements, food habits, people-related disturbance, and behavior at pupping areas. "Hands-on" marking of individuals will not likely come about this year because of the lack of effective ways to accomplish this on our mud-dwelling, spooky seals.

Peak harbor seal numbers for the last three years are shown for 1976 and 1977. Data was not collected in 1978. Year-round numbers average 25-35.

	<u>PEAK NUMBERS</u>	<u>1976</u>	<u>1977</u>
Adults		234	224
Pups		80	57

In other harbor seal happenings, "Pierson," an orphan seal recovered in Mowry Slough in July and rehabilitated by the Marine Mammal Center, was released to its home area in August. Though Pierson's head was colored with a temporary dye, he was not sighted again this year.

3. Resident Birds

Nothing to report.

4. Other Animal Life

Nothing to report.

## V. INTERPRETATION AND RECREATION

### A. Information and Interpretation

#### 1. On-Refuge

The on-refuge interpretive program was characterized by planning and preparation for opening the refuge to visitors during 1979. This included construction of the Headquarters-Interpretive Center and Environmental Education Center buildings, and writing a draft Interpretive Plan.

Ground-breaking ceremonies for both the Headquarters-Interpretive Center and Environmental Education Center took place in December, 1977. Construction began at both sites early in 1978 and continued throughout the year. During the course of construction, a number of changes were made in both buildings in order to provide additional display and storage space, and to improve access for handicapped visitors.

These changes included eliminating several windows in the display area of the Interpretive Center, redesigning restrooms, and eliminating protruding stair nosings. Changes were also made in the landscaping plan of the Environmental Education Center in order to replace many of the proposed exotic plants with California natives.

During 1978, the I&R staff drafted a two-part interpretive plan, intended to provide a framework and guidelines for development of the refuge's interpretive program. The first part provides an overview of the entire interpretive program. It describes goals, identifies themes, considers staffing needs, discusses publications and so forth. The second part of the plan contains detailed descriptions of every interior display and way-side exhibit on the refuge.

As stated in the draft Interpretive Plan, the goal of interpretation at this refuge will be to develop public awareness of the value of estuarine areas and concern for the future of these areas. The subject matter of our Interpretive displays and programs will be estuarine ecology in its broadest sense, including water pollution, infilling, shoreline development, hunting and other factors which affect the fish and wildlife resources of coastal wetlands. Our hope is to influence the public's social, economic and political decision-making in ways that will benefit these areas.

Actual use of the refuge by the public was quite limited during 1978. Refuge staff members presented interpretive tours to several visiting school and college classes.



## 2. Off-Refuge

The Refuge staff devoted a considerable amount of time to public relations and off-site interpretive activities. Staff members presented films and illustrated talks to many school classes, service clubs and conservation organizations.

Refuge staff members participated in the second annual Bay Area Environmental Education Resources Fair ("BAEER Fair"). The object of this weekend event is to provide area school administrators and teachers with information about all of the environmental education opportunities in the San Francisco Bay area and nearby central California. The "System 70" portable display on environmental education was set up at the fair, and Refuge personnel were on hand to answer questions and distribute literature.

## B. Recreation

### 1. Wildlife-Oriented

During 1978, the I&R staff began work on a draft Recreation Plan. It is expected that this plan will be completed early in 1979, and sent to the Regional and Area Offices for review. The plan will discuss the laws and policies governing recreational use of National Wildlife Refuges, listed the activities to be permitted at San Francisco Bay NWR and explain how these activities will be managed.

### 2. Non-Wildlife Oriented

Not applicable.

## C. Enforcement

With the able help and assistance of our YACC crew, we were able to post approximately 75 percent of our boundary before the opening of the waterfowl season in mid-October.

Opening morning of the waterfowl season found all station personnel, including the YACC crew, posted at Refuge entry gates and other access points to distribute a pamphlet showing the Refuge boundary and stating that there was no hunting on the area.

For the second year in a row we relied on a "high visibility patrol" approach throughout the hunting season. A total of 161 warnings for trespass were issued during the season.

The following incidents occurred within the Refuge boundaries and involved station Public Safety Officers:

<u>VIOLATION</u>	<u>NUMBER</u>
Take migratory nongame birds	1
Wanton waste	4
No Federal duck stamp	3
No State duck stamp	2
No fishing license	6

<u>INCIDENT (OTHER AGENCY ASSISTANCE)</u>	<u>NUMBER</u>
---	---------------

San Jose Police Department

Recover stolen vehicle	5
Investigate and recover stolen property (\$4,000 of lumber; one fork-lift)	1
Investigate stolen property (\$1,000 miscellaneous power tools)	1
Traffic control (road hazards)	2
Search for fireworks and other miscellaneous explosives	1

Fremont Police Department

Trespass and attempted burglary of cabin	1
Trespass and vandalism of cabin	2
Littering and vandalism (entry gate)	2
Detain subject; under influence of narcotics	1

Fremont Fire Department

Grass fire (Mowry Unit adjacent to Highway 84)	1
Cabin fire (Drawbridge cabin; Mowry Unit)	5

INCIDENT (OTHER AGENCY ASSISTANCE)NumberMenlo Park Police Department

Recover Stolen Vehicle (Greco Island Unit) 1

East Bay Regional Park Police

Dog pack chasing deer (Coyote Hills Regional Park adjacent to Fremont Unit) 1

Federal Protective Service (GSA)

Office building unsecured 2

Southern Pacific Railroad Police

Trespass through refuge along railroad right-of-way to fish or hunt 6

Vehicle Accidents

Vehicle in marsh (Mowry Unit adjacent to Highway 84; Newark Police Department) 1

Vehicle in salt pond adjacent to Highway 84 (California Highway Patrol) 2

Vehicle in salt pond (adjacent to Highway 84; Alameda County Sheriff Search and Rescue Unit) 1

Citizen Assists

Stranded motorist 4

Stranded boaters 2

The goals of the Public Safety Unit are to provide for the protection and safety of the refuge staff and visitors; security of refuge facilities and equipment; security of Leslie Salt Company facilities, and public utility properties located on the refuge; and maximum enforcement of Federal and State fish and wildlife laws, criminal statutes and refuge regulations.

## VI. OTHER ITEMS

### A. Field Investigations

In addition to the studies already mentioned, the following people and groups did work on the Refuge:

1. Brian Atwater of the U.S. Geological Survey did an exercise in marsh-aging with a group of summer interns at his agency. Brian looked at the marsh below headquarters hill where Newark Slough bends northward toward Dumbarton Bridge. Using hand-driven cores, Brian was able to tell the depositional history of this marsh.

It appears that the course of Newark Slough in this marsh has not appreciably changed since it was first surveyed in 1857. Also, finding fossil rhizomes of Spartina satisfied Brian that this species is a native here.

2. Richard Thians, a student at Cal Poly University, San Luis Obispo, began a study of salt pond usage by ducks on salt ponds 1 and 2 in the Greco Island Unit of the Refuge.
3. Dr. Philip Leitner of St. Mary's College, contracted by Pacific Gas and Electric, set up a study to predict the effects of overhead transmission lines on bird populations. Pacific Gas and Electric has indicated to the State Energy Commission that one route they are considering, if and when Pittsburg Coal-Burning Plants 8 and 9 are constructed, would cut through a portion of the Refuge along the Southern Pacific Railroad tracks through Audubon Marsh. Leitner's study is necessary to determine what species and numbers are at risk were such lines allowed. A copy of his study design is in the Refuge files.
4. Margaret Race, a doctoral student at the University of California, Berkeley, continued her work on the competition between the native salt marsh and introduced mud snail populations in Ideal Cement Marsh. She will donate a copy of her thesis to the Refuge upon completion of her work.

### B. Cooperative Programs

Nothing to report.

### C. Items of Interest

There were a number of changes in the Refuge staff during 1978. Jane Gull, formerly a Biologist with the U.S. Geological Survey, became our new Refuge Biologist in April.

Veronica Ray transferred from Havasu NWR in December to become our Clerk-Typist. Evelyn ("Jackie") Grody our Outdoor Recreation Planner in charge of environmental education, resigned from the Service in November.

In accordance with P.L. 88-523, a revenue sharing payment of \$10,224.99 was made to Alameda County; \$1,051.52 to San Mateo County, and \$3,110.73 to Santa Clara County.

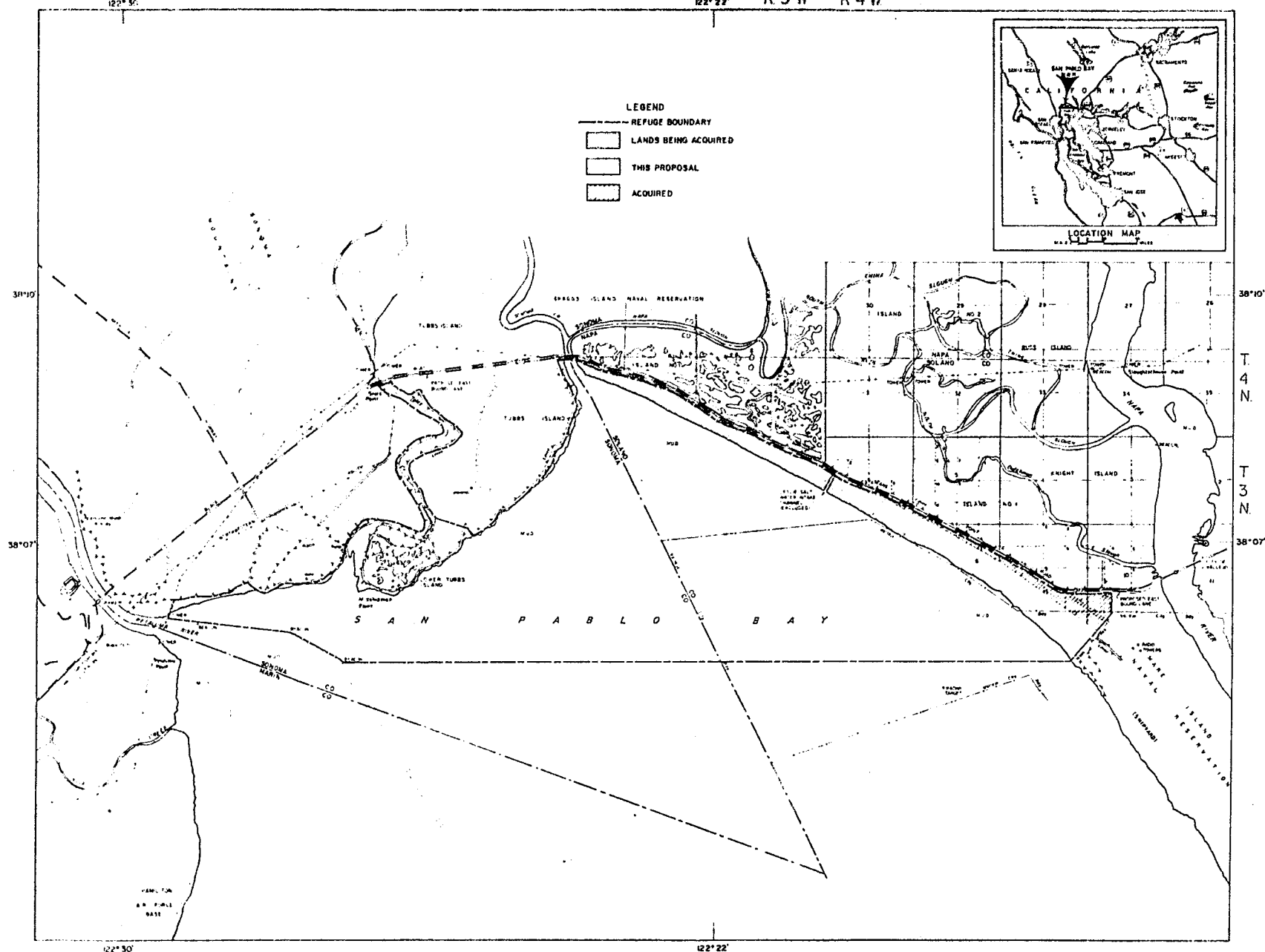
Credit for preparation of Section I, II, and Enforcement and Safety in Section VI go to Ben Crabb; Mike Bitsko for Section V, Items of Interest in Section VI; and to Jane Gull for Sections III, IV, and Field Investigations of Section VI.

D. Safety

Station safety meetings were held in conjunction with staff meetings. Safety hazards associated with seasonal activities (boating season, holiday season, etc.) were given special attention at the appropriate times.

UNITED STATES  
DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE



COMPILED BY THE DIVISION OF ENGINEERING  
FROM SURVEYS BY USGS, BLM.

PORTLAND, OREGON  
REV

JANUARY 1974

MT. DIABLO MERIDIAN

Scale

CHAINS

MILES

6	5	4	3	2	1
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36

TOWNSHIP  
DIAGRAM

MEAN DECLINATION  
1969

IR CALIF 870 43

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## I. GENERAL

### A. Introduction

The San Pablo Bay National Wildlife Refuge was officially included in the San Francisco Bay National Wildlife Refuge Complex on September 1, 1973. Land acquisition continues to proceed, but at an extremely slow rate.

### B. Climatic and Habitat Conditions

The Bay area has a pleasing year-round climate with dry, warm summers and mild winters. Approximately 18-inches of rain falls annually, principally during the winter months. Temperatures average about 45° F in winter and 68° in the summer.

### C. Land Acquisition

#### 1. Fee Title

On October 2, 1978, The Nature Conservancy conveyed the fee deed for 248.72 acres, more or less, of land on Lower Tubbs Island to the Service.

#### 2. Easements

Nothing to report.

#### 3. Other

Nothing to report.

### D. System Status

#### 1. Objectives

No outputs are currently claimed for the refuge because of our inability to acquire land and open water within the proposed boundary.

#### 2. Funding

Fiscal year funding for the refuge has been via the San Francisco Bay National Wildlife Refuge Complex's operating cost budget.

## II. CONSTRUCTION AND MAINTENANCE

### A. Construction

Nothing to report.



B. Maintenance

Nothing to report.

C. Wildfire

Nothing to report.

III. HABITAT MANAGEMENT

A. Croplands

Not applicable.

B. Grasslands

Not applicable.

C. Wetlands

Nothing to report.

D. Forestlands

Not applicable.

E. Other Habitat

Nothing to report.

F. Wilderness and Special Areas

Not applicable.

G. Easements for Waterfowl Management

Not applicable.

IV. WILDLIFE

A. Endangered Species

Nothing to report.

B. Migratory Birds

1. Waterfowl

The winter waterfowl census was conducted on January 27, the results of which are presented in the following table:

<u>Species</u>	<u>Numbers</u>
Mallard	54
Pintail	13,295
Gadwall	1
American Widgeon	972
Shoveler	2,585
Teal (sp)	172
Canvasback	8,752
Scaup (sp)	22,352
Goldeneye	24
Bufflehead	110
Ruddy	15,655
Sea Ducks	10,806
Coots	7,172
TOTAL	81,950

Aerial waterbird censuses were flown on October 26 and November 28. The results are presented below and are compared with 1977 data where available.

<u>Species</u>	<u>Oct. 1977</u>	<u>Nov.</u>	<u>Oct. 1978</u>	<u>Nov.</u>
Western Grebe			226	809
White Pelican			13	1
Brown Pelican			4	0
Cormorant			259	307
Blue Heron			18	18
Common Egret			25	74
Snowy Egret			76	63
Night Heron			15	0
TOTAL			636	1,272
Mallard			24	210
Gadwall			20	108
Pintail		1,880	2,753	3,345
Teal			186	622
Widgeon			930	832
Shoveler		2,040	1,050	935
Canvasback		5,485	537	9,967
Scaup		27,511	7,970	15,022
Goldeneye				58
Bufflehead				551
White-win. Scoter				
Surf Scoter			912	5,602
Ruddy		8,853	1,954	6,332
Unidentified Duck			500	
TOTAL WATERFOWL	45,769	45,769	16,836	43,584

Species	Oct. 1977	Nov.	Oct. 1978	Nov.
Coot			1,213	1,791
Black-bel. Plover			30	50
Curlew			188	0
Sandpiper	37,350		42,623	41,975
Willet	4,100		2,357	2,557
Dowitcher	3,550		840	970
Godwit	3,750		2,113	1,267
Avocet	1,985		2,469	2,697
Stilt			322	933
TOTAL SHOREBIRDS		50,735	50,942	50,449
TOTAL ALL BIRDS		96,504	69,627	97,096

2. Marsh and Water Birds

Nothing to report.

3. Shorebirds, Gulls, Terns, and Allied Species

Nothing to report.

4. Raptors

Nothing to report.

5. Other Migratory Birds

Nothing to report.

C. Mammals and Non-Migratory Birds and Others

1. Game Mammals

Nothing to report.

2. Other Mammals

Nothing to report.

3. Resident Birds

Nothing to report.

4. Other Animal Life

Nothing to report.

## V. INTERPRETATION AND RECREATION

### A. Information and Interpretation

#### 1. On-Refuge

Nothing to report.

#### 2. Off-Refuge

Nothing to report.

### B. Recreation

#### 1. Wildlife Oriented

Nothing to report.

#### 2. Non-Wildlife Oriented

Nothing to report.

### C. Enforcement

With the addition of the Lower Tubbs Island property to the 185 acres previously purchased, weekend patrols were made throughout the waterfowl and pheasant season. There were no citations issued by Refuge personnel and State wardens working in the area had transferred before we could get violation information from them.

## VI. OTHER ITEMS

### A. Field Investigations

Nothing to report.

### B. Cooperative Programs

Not applicable.

### C. Items of Interest

All sections of this narrative were written by Ben Crabb except section IV., which was written by Jane Gull.

In accordance with P.L. 88-523, a revenue sharing payment of \$774.63 was made to Solano County.

### D. Safety

See San Francisco Bay National Wildlife Refuge.

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## I. GENERAL

### A. Introduction

The Farallon National Wildlife Refuge consists of a group of rocky islets totalling 211 acres, and is located 30 miles west of San Francisco. The islets extend for about eight miles in a northwesterly direction, and are roadless, essentially inaccessible, and with one exception, undeveloped. A U.S. Coast Guard lighthouse installation exists on the largest island, Southeast Farallon.

The southern Farallons include several rocks which total about 120 acres. The main island, Southeast Farallon, reaches a height of 340 feet above sea level and is approximately 70 acres. Two miles northwest is Middle Farallon, a single rock 50 yards in diameter and 20 feet high. The North Farallons are four miles north and consist of two clusters of islets and rocks, extending over one mile. They reach a height of 155 feet above sea level. Noonday Rock is the westernmost island, located about three miles northwest of the North Farallons.

### B. Climatic and Habitat Conditions

The climate is characterized by frequent strong winds and dense fog. Rainfall occurs mainly during the winter, with summer moisture usually limited to damp fogs. Annual precipitation is about ten inches. Approximately eight inches were recorded in 1976.

Temperatures are almost consistant year-round, seldom falling below 40°F or rising above 60°F.

### C. Land Acquisition

The Refuge was established by Executive Order in 1909. The Southeast Farallon was subsequently added by secondary withdrawal through Public Land Order in 1969.

### D. System Status

#### 1. Objectives

The Farallon National Wildlife Refuge was officially included in the San Francisco Bay National Wildlife Refuge Complex on September 1, 1973, coinciding with the similar transfer of the San Pablo Bay National Wildlife Refuge to the San Francisco Bay National Wildlife Refuge Complex. No formal objective setting has been done for the Farallons.

#### 2. Funding

The Farallon National Wildlife Refuge is treated as a sub-station of the San Francisco Bay National Wildlife Refuge Complex and the OCB is incorporated into the complex base budget allotment.

## II. CONSTRUCTION AND MAINTENANCE

### A. Construction

Nothing to report.

### B. Maintenance

A generator was purchased by the Fish and Wildlife Service and installed by the U.S. Coast Guard. Maintenance on all Fish and Wildlife Service equipment is provided by the Coast Guard through a cooperative agreement.

### C. Wildfire

Not applicable.

## III. HABITAT MANAGEMENT

### A. Croplands

Not applicable.

### B. Grasslands

Not applicable.

### C. Wetlands

Not applicable.

### D. Forestlands

Not applicable.

### E. Other Habitat

Not applicable.

### F. Wilderness and Special Areas

Not applicable.

### G. Easements for Waterfowl Management

Not applicable.

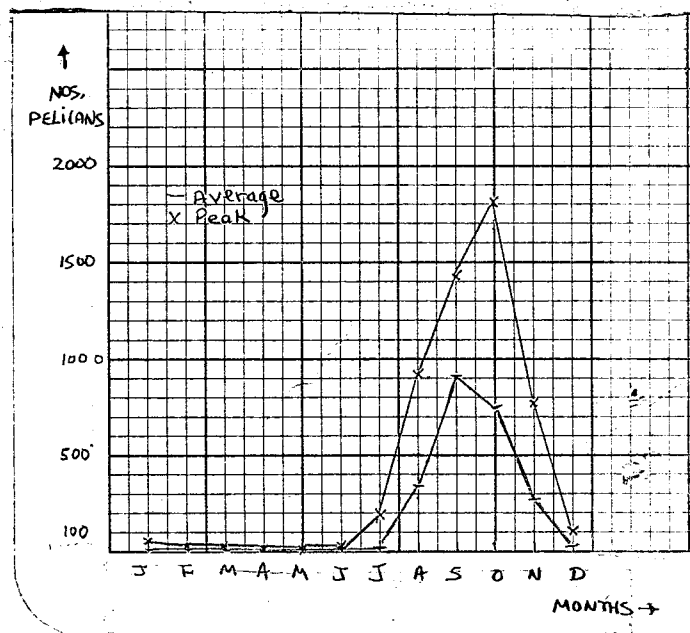
#### IV. WILDLIFE

##### A. Endangered Species

Sightings of one to three peregrine falcons occurred in the fall and winter as well as one sighting in May.

<u>Month</u>	<u>Peak Number Peregrines</u>
Jan.	3
May	1
Oct.	2
Nov.	3
Dec.	3

California brown pelicans were present every month of the year. The populations begin increasing in July as birds migrate in from their southern coastal and island breeding areas. Pelicans are mostly gone by December. The following graph depicts average and peak numbers found in 1978.



##### B. Migratory Birds

Annual production figures minored the poor breeding season of 1976. Hardest hit were the cormorants and gulls. It was hypothesized that the cold California current and its associated rich food supply did not come near the Farallons this season, thus depressing the breeding success of some species. On the positive side, tufted puffins and rhinoceros auklets experienced their third season of increased number of breeding pairs and chicks produced. The following table summarizes the last four years of production information.



Species	No. Breeding Pairs				No. Chicks Produced			
	1975	1976	1977	1978	1975	1976	1977	1978
Ashy Storm Petrel	2,000	2,000	1,800	1,800	1,600	1,440	810	1,116
Leach's Storm Petrel	700	800	750	700	560	576	338	434
D. C. Cormorant	55	90	90	90	99	90	180	135
Brandt's Cormorant	11,000	11,000	12,000	3,000	23,000	6,660	15,600	630
Pelagic Cormorant	375	375	800	0	862	0	1,600	0
Black Oystercatcher	9	18	12	14	8	23	15	7
Western Gull	11,500	11,000	11,000	10,000	20,700	11,990	17,380	10,000
Common Murre	14,000	14,000	20,000	25,000	13,300	10,640	15,800	19,000
Pigeon Guillemot	1,000	1,000	1,000	500	1,300	550	1,480	140
Tufted Puffin	35	70	80	80	31	56	64	72
Rhinoceros Auklet	11	20	40	60	9	16	32	54
Cassin's Auklet	52,500	50,000	50,000	50,000	36,750	30,500	38,000	34,000
TOTALS	93,185	90,373	97,572	91,244	98,219	62,541	91,299	65,588

Raptor sightings concentrated on the three usual species: peregrine falcons, burrowing owls and kestrels, which are fall and winter residents only. No unusual species were sighted this year.

1. Waterfowl

Nothing to report.

2. Marsh and Water Birds

Nothing to report.

3. Shorebirds, Gulls, Terns, and Allied Species

Nothing to report.

4. Raptors

Nothing to report.

5. Other Migratory Birds

Nothing to report.

C. Mammals and Non-Migratory Birds and Others

Average maximum and minimum monthly population numbers and breeding success for the four resident seal and sea lion species are shown below for both the current year and 1977.

	<u>Minimum</u>		<u>Maximum</u>	
	1977	1978	1977	1978
California Sea Lion	141 (July)	310 (Apr.)	1000 (Apr.)	1649 (Oct.)
Stellar Sea Lion	39 (Jan.)	58 (Oct.)	200 (June)	142 (June)
Harbor Seal	2 (Oct.)	8 (Jan.)	200 (June)	31 (July)
No. Elephant Seal	26 (Aug.)	28 (July)	480 (Apr.)	640 (May)

	<u>No. Females</u>		<u>No. Pups Born</u>		<u>No. Surviving</u>	
	1977	1978	1977	1978	1977	1978
California Sea Lion	?	?	1-2	0	1-2	0
Stellar Sea Lion	127	103	27	18	16	8
Harbor Seal	?	?	2	2	2	2
No. Elephant Seal	104	133	?	133	84	98

Whale and non-breeding marine mammals were as follows:

Northern Fur Seal - 2 in July, 1 in August, 1 in June.  
Humpback Whale - 3 in September, 3 in May.  
California Gray Whale - 3 in May.

1. Game Mammals

Not applicable.

2. Other Mammals

Nothing to report.

3. Resident Birds

Nothing to report.

4. Other Animal Life

Nothing to report.

V. INTERPRETATION AND RECREATION

A. Information and Interpretation

1. On Refuge

Nothing to report.

2. Off Refuge

Nothing to report.

B. Recreation

1. Wildlife Oriented

Nothing to report.

2. Non-Wildlife Oriented

Nothing to report.

C. Enforcement

The unauthorized operation of aircraft remains the primary enforcement problem on the islands. Contract employees from the Point Reyes Bird Observatory (PRBO) are stationed on the island and report aircraft violations as well as boating harassment and shooting incidents.

A violation reporting system has been set up which results in prompt notification to this office of incidents.

All possible effort is being made to identify and cite operators of boats and aircraft which are involved in wildlife harassment and/or shooting incidents.

## VI. OTHER ITEMS

### A. Field Investigations

Eight short- and long-term field investigations were begun on the islands this year.

In the biological arena were the following projects:

1. Matthias Radecki of the University of British Columbia began an investigation of flight locomotion in alcid species. His main tools of analysis will be examination of filmed flight in slow motion and measuring various anatomical characteristics. This study will require more than one field season for completion.
2. Dr. Richard Grau and Mr. Thomas Roudybush of University of California, Davis, will continue their oil dosing experiments with Cassin's auklets and western gulls. This study was described in the 1977 narrative report. A report should be submitted by the authors sometime in 1979.
3. Diana Petrula, enrolled in a doctoral program at University of California, Los Angeles (UCLA), began a study of the microclimate of Cassin's auklet nesting burrows as well as an investigation of the metabolic rate of this species. Her goal is to determine the physiological stress on incubating birds. Upon completion of her studies, Diane will donate a copy of her thesis to the Refuge.
4. Dr. Bruce Blumer and Edward Goldberg of Scripps Institute of Oceanography were issued a permit to collect up to 300 California mussels for heavy metal and pesticide analysis under EPA's "Mussel Watch" program.
5. Derhan Giuliani, an amateur insect collector who is in close cooperation with California Academy of Sciences, was given permission to do a limited insect and spider collection on the islands. He will donate a representative labelled set of specimens to the Refuge when he completes the identifications.
6. Doug Nelson, a Ph.D. candidate at the University of Michigan, commenced a behavioral study of communication of alcid species. This will require three field seasons on the islands at the end of which a copy of his thesis will be donated to the Refuge.

Outside the realm of biology, the following projects were undertaken:

1. Dr. Stephen Norwick, professor of geology at Sonoma State University, visited the islands one weekend to look at a

problem in "rock mechanical behavior" of the Farallon Islands rock association. He is trying to discover whether the San Andreas fault system is truly symmetrical.

2. Dr. Peter Lester of San Jose State University, as part of a cooperative effort with several groups, set up an observational program, "MABLES" (Marine Boundary Layer Experiments) on the islands in August to collect various weather data on the marine layer (that layer between the ocean surface and elevated temperature inversion).

B. Cooperative Programs

No changes were made in the existing cooperative agreement between the Refuge and the U.S. Coast Guard. Boat service is still provided to the islands once a month, weather permitting.

The Point Reyes Bird Observatory received an additional paid position to help perform their duties on the Farallons as resident protectors and researchers for the USFWS. They now receive the equivalent salaries of one GS-5/1 and one GS-7/1.

C. Items of Interest

All sections of this narrative were written by Ben Crabb except section IV and VI, which were written by Jane Gull.

D. Safety

See San Francisco Bay National Wildlife Refuge.

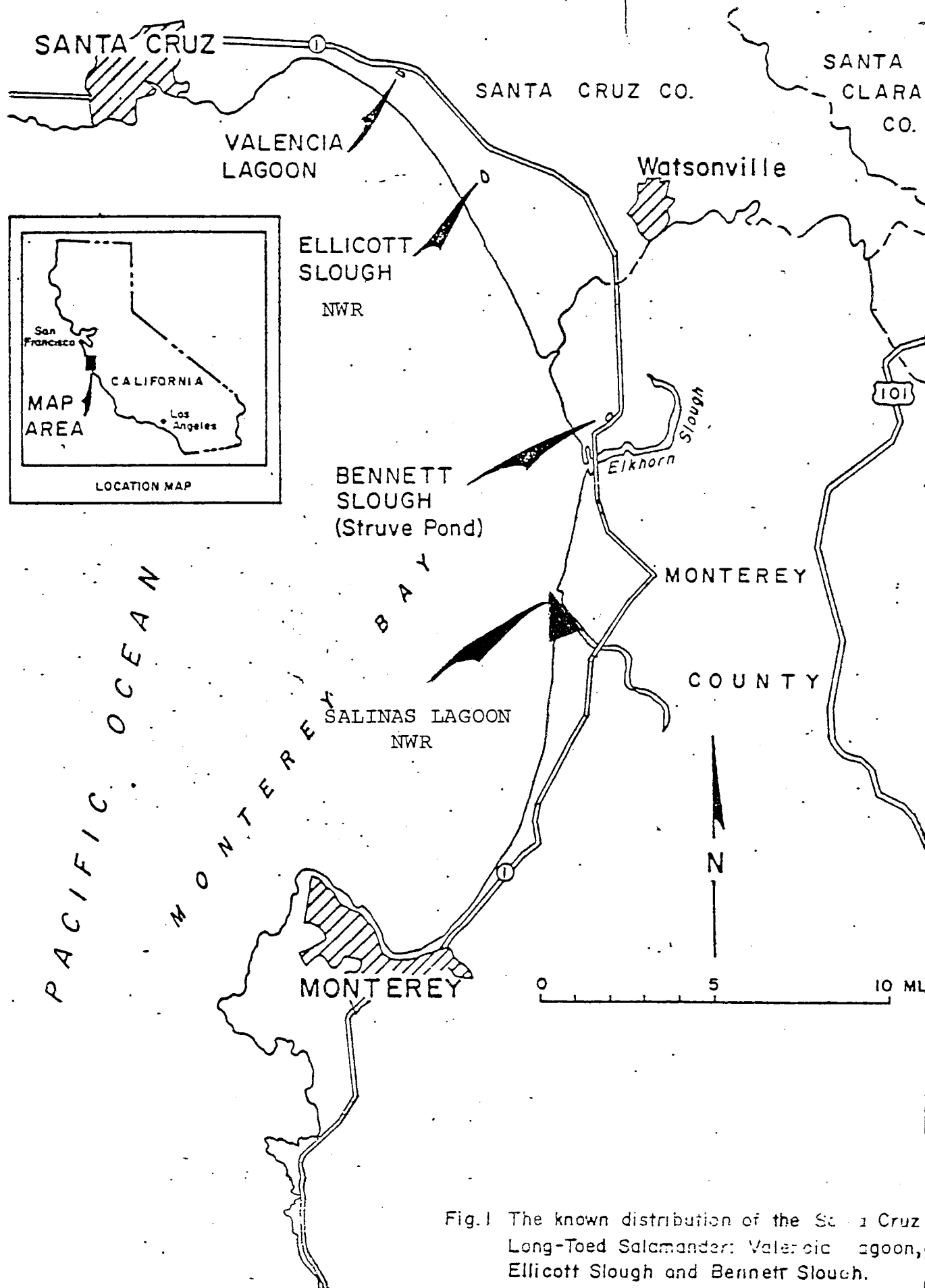


Fig.1 The known distribution of the Santa Cruz Long-Toed Salamander: Valencia Lagoon, Ellicott Slough and Bennett Slough.

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## I. GENERAL

### A. Introduction

The Service has acquired all of the 128 acres of land surrounding Ellicott Slough pond (owned by California Fish and Game), four miles west of Watsonville in Santa Cruz County, California. The purpose of this Refuge is to enhance the survival of the Santa Cruz long-toed salamander (Ambystoma macrodactylum croceum) that breed in the pond.

### B. Climatic and Habitat Conditions

The climate of the Santa Cruz vicinity is Mediterranean with the annual rainfall of 32-inches occurring predominantly between November and March. The salamanders breeding time is during January and February because the early rains are not sufficient to fill the ephemeral pond. The main pond did not fill in either 1975 or 1976 and no breeding occurred. Rainfall for 1978 was above normal at the close of the report period.

### C. Land Acquisition

#### 1. Fee Title

Nothing to report.

#### 2. Easements

In 1975 the Service acquired an access road easement of 1.12 acres.

#### 3. Other

A cooperative agreement between the California Department of Fish and Game and the Service for the management of the area has been approved.

### D. System Status

#### 1. Objectives

The Santa Cruz long-toed salamander recovery plan will serve as the management plan for the area. The prime objective of the plan is to restore the salamander to a nonendangered status by maintenance of the Ellicott Santa Cruz long-toed salamander's population at or above present levels and maintenance of the habitat in an optimum condition.

#### 2. Funding

Funding for this Refuge unit is included in the San Francisco Bay National Wildlife Refuge Complex base budget.



## II. CONSTRUCTION AND MAINTENANCE

### A. Construction

Nothing to report.

### B. Maintenance

Nothing to report.

### C. Wildfire

Not applicable.

## III. HABITAT MANAGEMENT

### A. Croplands

Not applicable.

### B. Grasslands

Nothing to report.

### C. Wetlands

Nothing to report.

### D. Forestlands

Not applicable.

### F. Wilderness and Special Areas

Not applicable.

### G. Easements for Waterfowl Management

Not applicable.

## IV. WILDLIFE

### A. Endangered Species

Most of this year's research emphasis on the endangered Santa Cruz long-toed salamander has been at the Valencia Ecological Reserve where an estimated 2,600 adult population exists. This site is located approximately four miles from the Ellicott population.

Larval growth rates of the Ellicott population were measured by the biologist contracted by California Department of Fish and Game to study the Valencia population.

The results will be available in the Valencia report to be published in 1979-1980 by Rhonda Reed-Gébhart.

Three meetings of the Santa Cruz Long-toed Salamander Recovery Team were held throughout the year to discuss the Valencia research project and land acquisition progress by California Department of Fish and Game at that site. It was recommended that Jane Gull, the new biologist at San Francisco Bay National Wildlife Refuge, be officially accepted as the replacement for Cathy Osugi (outgoing biologist) on the recovery team.

B. Migratory Birds

1. Waterfowl

Nothing to report.

2. Marsh and Water Birds

Nothing to report.

3. Shorebirds, Gulls, Terns, and Allied Species

Nothing to report.

4. Raptors

Nothing to report.

5. Other Migratory Birds

Nothing to report.

C. Mammals and Non-Migratory Birds and Others

1. Game Mammals

Nothing to report.

2. Other Mammals

Nothing to report.

3. Resident Birds

Nothing to report.

4. Other Animal Life

Nothing to report.

## V. INTERPRETATION AND RECREATION

### A. Information and Interpretation

#### 1. On-Refuge

Nothing to report.

#### 2. Off-Refuge

Nothing to report.

### B. Recreation

#### 1. Wildlife Oriented

Nothing to report.

#### 2. Non-Wildlife Oriented

Nothing to report.

### C. Enforcement

In the past this area was abused by off-road vehicles. These vehicles were responsible for tearing up paths, disturbing wildlife and littering. Past enforcement along with increased patrols, both by this office and California Department of Fish and Game personnel, has resulted in a marked decrease of unauthorized use. Added fencing and posting of signs have cut down on trespassing from adjoining properties.

## VI. OTHER ITEMS

### A. Field Investigations

A study of plant succession was completed by Janice Von Dohlen of California Department of Fish and Game. The manuscript as well as a relatively complete plant list should be available sometime in 1979-1980. A list of the areas's reptiles and mammals is also being prepared by Von Dohlen as a result of trapping studies she conducted at Ellicott.

### B. Cooperative Programs

Nothing to report.

### C. Items of Interest

All sections of this narrative were written by Ben Crabb except sections IV and VI, which were written by Jane Gull.

In accordance with P.L. 88-53, a revenue sharing payment of \$2,176.93 was made to Santa Cruz County.

D. Safety

See San Francisco Bay National Wildlife Refuge.

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## I. GENERAL

### A. Introduction

During the spring of 1973, 424 acres of excess property from the United States Army and 94 acres of excess property from the United States Coast Guard were transferred to the Service. The two tracts are contiguous and managed as one unit. The location of the Refuge is 11 miles northeast of the City of Monterey at the confluence of the Salinas River and Monterey Bay. In September 1974, a cooperative agreement was effected between the Service and California Department of Fish and Game, allowing the latter agency to manage the area as the "Salinas River Wildlife Management Area."

### B. Climatic and Habitat Conditions

The Monterey Bay area has pleasing year-round climate with dry warm summers and mild wet winters. The area is an important coastal wetland and consists of the following habitat types: ocean - 130 acres, beach - 22 acres, lagoon - 45 acres, grassland - 44 acres, river - 74 acres, sand dunes - 32 acres, salt marsh - 78 acres, and former cultivated land (artichokes) - 93 acres.

### C. Land Acquisition

#### 1. Fee Title

The acreage referred to in Section A was transferred to the Service in fee title in 1973.

#### 2. Easements

Nothing to report.

#### 3. Other

Nothing to report.

### D. Systems Status

#### 1. Objectives

Nothing to report.

#### 2. Funding

Not applicable. Any administrative or law enforcement work performed for the area has been funded under the San Francisco Bay National Wildlife Refuge Complex operating coast budget.

## II. CONSTRUCTION AND MAINTENANCE

### A. Construction

Nothing to report.

### B. Maintenance

Nothing to report.

### C. Wildfire

Nothing to report.

## III. HABITAT MANAGEMENT

### A. Croplands

Nothing to report.

### B. Grasslands

Nothing to report.

### C. Wetlands

Nothing to report.

### D. Forestlands

Nothing to report.

### E. Other Habitat

Nothing to report.

### F. Wilderness and Special Areas

Nothing to report.

### G. Easements for Waterfowl Management

Not applicable.

## IV. WILDLIFE

### A. Endangered and/or Threatened Species

Nothing to report.

### B. Migratory Birds

See report on next page.

OPENING WEEKEND WATERFOWL SEASON  
OCTOBER 21-22, 1978  
SALINAS WILDLIFE MANAGEMENT AREA

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A hunter survey was taken during the opening weekend of the 1978 waterfowl hunting season at the Salinas WMA. The purpose of the survey was to obtain profile information about the population of hunters and others who use the area. After terminating hunting, 62 hunters were interviewed as they returned to their cars.

The survey questionnaire attached reveals the following information about Salinas WMA users:

The majority of hunters use the area only to hunt. Hiking and birdwatching among hunters are much lower priorities here. The "average" hunter is male, 20-30 years old, lives within 50 miles of Salinas WMA, hunts the area often (more than 10 times), and has hunted for a good part of his life (more than 10 years). Most people hunt in parties of 2 or 3. ~~Though the 2-day take was low (47 total ducks),~~ hunter enthusiasm was high. Most hunters approved of the road closure and considered it increased the quality of the hunt. Improvements to the area suggested by the hunters include establishment of blinds; construction of fresh water ponds; more people control and law enforcement; prohibition of rifles; crop cultivation; and provisions of bathroom facilities, walkways over the mud, and horseback riding trails.

Hunter take for the weekend was as follows:

Pintail	18
Scoter	15
GW Teal	5
Coot	3
Ruddy	2
Mallard	2
Shoveler	1
Widgeon	1
<hr/>	
TOTAL	47



WALKWAYS OVER MUD BLINDS BOW POUNDS PEOPLE CONTROL MOOSE PARKING CLOSER PARKING AREA SEED APPROVE NO STOCK PHEASANT OPEN ROAD Young ad. hunter ed. HOUSEBURY BATH R.



PLEASE FILL IN THIS SHORT SURVEY AND RETURN IT TO A U.S. FISH & WILDLIFE SERVICE REPRESENTATIVE BEFORE DEPARTING SALINAS RIVER WILDLIFE MANAGEMENT AREA.



1. SEX M 1

NUMBER IN PARTY

2. AGE 15 15-20 yrs. 20-30 yrs. 30-40 yrs. 40 and up

3. DISTANCE FROM RESIDENCE TO SALINAS RIVER WILDLIFE MANAGEMENT AREA

1-5 miles 5-10 miles 10-50 miles 50 miles and up

4. HOW DID YOU LEARN ABOUT SALINAS RIVER WILDLIFE MANAGEMENT AREA?

FRIEND 1 NEWSPAPER 1 CALIFORNIA DEPARTMENT OF FISH & GAME 1  
U.S. FISH & WILDLIFE SERVICE 1 OTHER(SPECIFY) 1

5. HOW OFTEN DO YOU COME HERE PER YEAR?

1-2 times 2-5 times 5-10 times 10 or more times

6. FOR WHAT PURPOSES DO YOU COME HERE?

HIKING 1 BIRDWATCHING 1 HUNTING 1 OTHER(SPECIFY) 1  
FISHING  
HUNT RABBITS  
PARKING  
DOG RUNNING (ILLEG)  
GUN PRACTICE  
PICK UP RELOADS

7. HOW LONG HAVE YOU HUNTED WATERFOWL?

1 year 2-5 years 5-10 years 10 years and up

WHAT SPORTSMAN OR WILDLIFE ORGANIZATIONS DO YOU BELONG TO?

AM. SPORTSMEN OUTDOOR CH. CARMEL GUN CLUB NRA Fed. Fly Fish DU Mont. Co. Sportsmen Los Banos Zimmerman Buck FORT DOD ROBTOW

9. DOG 1

HUNTER TAKE

PINTAIL

18

RUDDY DUCK 2

SCOTER

15

MALLARD 2

GREEN-WINGED TEAL

5

SHOVELER 1

COOT

3

WIDGEON 1

TOTAL 47



PLEASE FILL IN THIS SHORT SURVEY AND RETURN IT TO A  
U.S. FISH & WILDLIFE SERVICE REPRESENTATIVE BEFORE  
DEPARTING SALINAS RIVER WILDLIFE MANAGEMENT AREA.

OCTOBER 21-22, 1978  
(OPENING DAY WATERFOWL)



1. SEX M F NUMBER IN PARTY 1 2 3 4 5  
6 1 7 11 8 1 1

2. AGE 2 less than 15 10 15-20 yrs. 30 20-30 yrs. 13 30-40 yrs. 7 40 and up

3. DISTANCE FROM RESIDENCE TO SALINAS RIVER WILDLIFE MANAGEMENT AREA

11 1-5 miles 19 5-10 miles 24 10-50 miles 3 50 miles and up

4. HOW DID YOU LEARN ABOUT SALINAS RIVER WILDLIFE MANAGEMENT AREA?

FRIEND 52 NEWSPAPER \_\_\_\_\_ CALIFORNIA DEPARTMENT OF FISH & GAME 16

U.S. FISH & WILDLIFE SERVICE \_\_\_\_\_ OTHER(SPECIFY) \_\_\_\_\_

5. HOW OFTEN DO YOU COME HERE PER YEAR?

14 1-2 times 12 2-5 times 9 5-10 times 30 10 or more times

6. FOR WHAT PURPOSES DO YOU COME HERE?

HIKING 18 BIRDWATCHING 6 HUNTING 62

FISHING 5  
RABBITS 2  
DOG EXERCISE 4  
OTHER(SPECIFY) \_\_\_\_\_  
GUN PRACTICE 1  
RELOAD COLL. 1  
PARKING 3

7. HOW LONG HAVE YOU HUNTED WATERFOWL?

4 1 year 14 2-5 years 5 5-10 years 39 10 years and up

WHAT SPORTSMAN OR WILDLIFE ORGANIZATIONS DO YOU BELONG TO?

DUCKS UNLIMITED (5), AM. SPORTSMEN (1), OUTDOOR CA. (1), CARMEL GUN (1), FED. FLY + FISH (1),  
MONTEREY CO. SPORTSMEN (1), LOS BANOS (1), ZIMMERMAN (1), FORT ORD RODYGUN (1), NRA (2)

9. HUNTING DOG USED 13

4

10. COMMENTS (SEE REVERSE)

1. Waterfowl

Nothing to report.

2. Marsh and Water Birds

Nothing to report.

3. Shorebirds, Gulls, Terns and Allied Species

Nothing to report.

4. Raptors

Nothing to report.

5. Other Migratory Birds

Nothing to report.

C. Mammals and Non-Migratory Birds and Others

1. Game Mammals

Nothing to report.

2. Other Mammals

Nothing to report.

3. Resident Birds

Nothing to report.

4. Other Animal Life

Nothing to report.

V. INTERPRETATION AND RECREATION

A. Information and Interpretation

1. On-Refuge

Nothing to report.

2. Off-Refuge

Nothing to report.

B. Recreation

1. Wildlife Oriented

Nothing to report.

## 2. Non-Wildlife Oriented

Nothing to report.

### C. Enforcement

This area lies approximately 70 miles south of San Francisco but shares in the phenomenon of being "open space" in a large metropolitan area. Visitor use on the area varies with the seasons and availability of species to be hunted, fished or observed. Due to the past drought, the vegetation was slight, river low and the salt water pond in the northwest corner of the area was dry. For this reason, the area's public use was down. A parking lot has been constructed and all vehicle use (with exception of off-road vehicles which gain entry along the beach front) has been eliminated. Other problem areas are littering and unauthorized use, i.e., interior roadways. Patrols by Refuge staff and State Fish and Game wardens have been made, as time allows.

## VI. OTHER ITEMS

### A. Field Investigations

Nothing to report.

### B. Cooperative Programs

Refuge personnel and representatives from the USFWS Endangered Species and Ecological Services offices in Sacramento met with the Environmental Protection Agency (EPA) and their engineering consultants about the possibility of routing a 6-foot diameter sewage pipeline through the Refuge to meet the sewage outfall junction box just outside the southern border of the Refuge. The Refuge expressed its concerns for the destruction of wetland habitat around the lagoon, loss of sand dune habitat for the endangered Smith's blue butterfly, disruption of cover for quail, interference with breeding areas of ducks, snowy plovers, avocets, and stilts, conflict with fishing, claiming, and other recreational pursuits, as well as our concern for the increased risk of unauthorized public access to this area. The EPA spokesperson was also advised of Region I USFWS policy regarding prohibition of new rights-of-ways through Refuges unless there are no viable alternatives. With this background EPA proceeded to apply for a right-of-way waiver. No final action was taken on this project this year.

C. Items of Interest

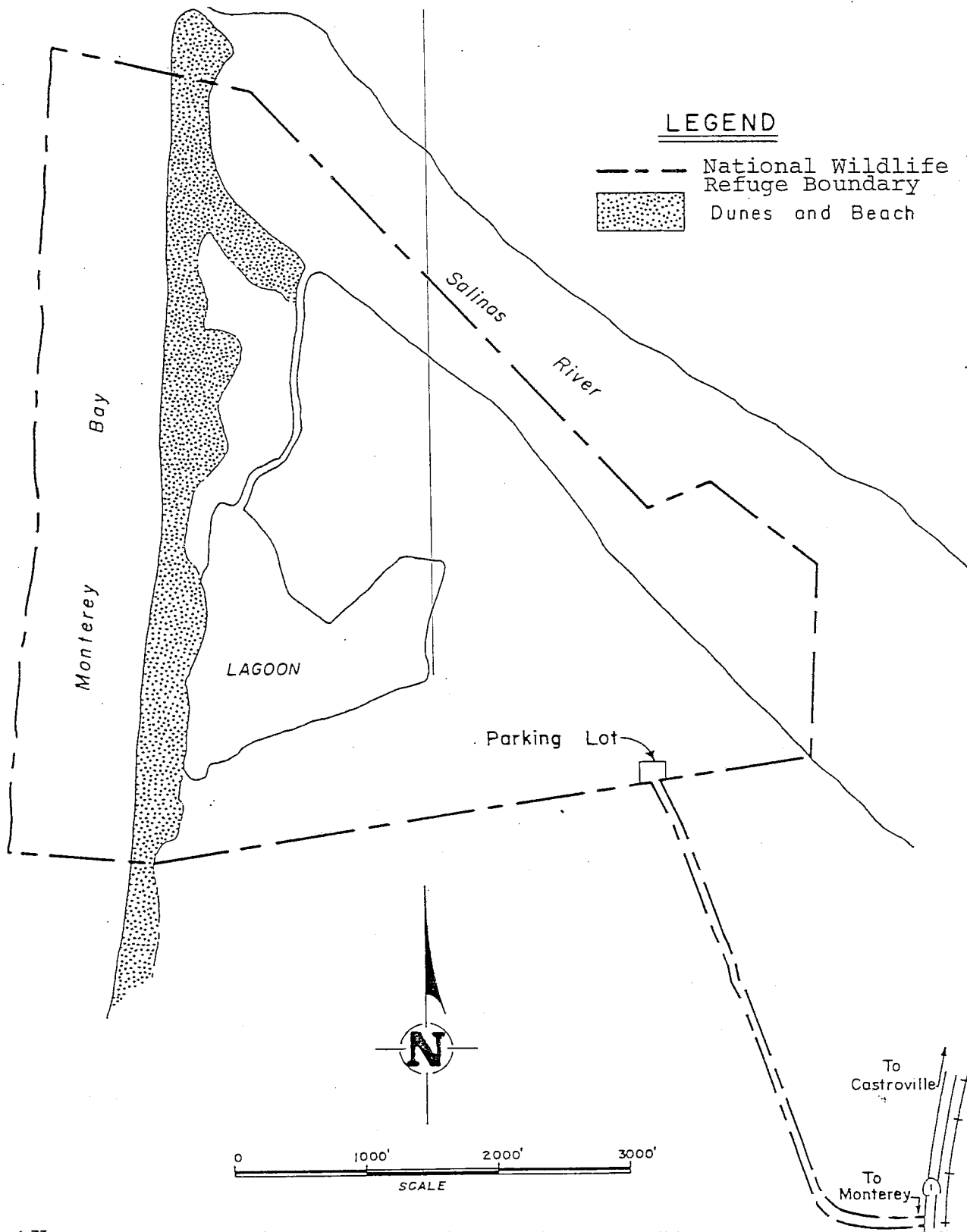
All sections of this narrative were written by Ben Crabb except section IV, which was written by Jane Gull.

In accordance with P.L. 88-523, a revenue sharing payment of \$2,181.18 was made to Monterey County.

D. Safety

See San Francisco Bay National Wildlife Refuge narrative.

United States Fish and Wildlife Service  
Salinas Lagoon National Wildlife Refuge  
Monterey County, California



## TITLE 50 CODE OF FEDERAL REGULATIONS

Public entry and use of the Salinas Lagoön National Wildlife Refuge shall be in accordance with applicable State and Federal Regulations, subject to additional special regulations and conditions as indicated below. Portions of the refuge which are open for recreation are designated by signs and/or delineated on maps (see reverse). This area is open to the public from one hour prior to sunrise to one hour after sunset.

1. No vehicle travel is permitted except in the designated parking lot.
2. Picnicking is permitted on the beach and other areas so designated by signs.
3. Camping and overnight parking is not permitted on any part of the refuge (including the parking lot).
4. Fires are not permitted.
5. Horses are not allowed on the refuge.
6. All hunters and anglers must possess a valid State hunting/fishing license and all required State and Federal stamps and permits.
7. Hunting of waterfowl and upland game during seasons established by State or Federal regulations.
8. Shotguns, and bows and arrows only may be used for hunting.
9. No other firearms are permitted.
10. Dogs are not permitted with the following exceptions: Dogs under strict control and actively employed for hunting are permitted during open hunting seasons. Dogs under strict control by their handler may be trained for waterfowl or upland game. All training must be in accordance with State Fish and Game codes and regulations. No training or trials may be conducted within 200 yards of the Salinas River.
11. Field trials may be conducted with prior permit (call or write addresses below).
12. Only temporary blinds constructed above ground and of natural vegetation are permitted.
13. Fishing is permitted in Monterey Bay. Fishing is not permitted in Salinas River from the refuge shoreline.
14. DO NOT DISTURB wildlife or vegetation.

U. S. Fish and Wildlife Service  
3849 Peralta Boulevard  
Fremont, CA 94536

Phone: (415) 792-0222

Calif. Department of Fish and Game  
2201 Garden Road  
Monterey, CA 93940

Phone: (408) 373-0901